

WHAT IS CLAIMED:

1. A method for regenerating a tissue or organ in the body of a mammal by transdifferentiation, wherein said tissue or organ is damaged due to injury or is missing, comprising the steps of:

(a) dedifferentiating the cells at the site of injury by administering a dedifferentiating effective amount of an agent selected from retinoids, 12-O-tetradecanoylphorbol-13 acetate, 0.1 M hydrochloric acid (pH<5), hypertonic saline (saturated NaCl), a copper chelator selected from triethylenetetramine tetrahydrochloride, and heavy metals selected from copper, zinc and cadmium;

(b) transdifferentiating said dedifferentiated cells of step (a) by contacting said cells with a transdifferentiation-effective amount of transdifferentiating agent selected from inositol, zinc acetate, guanosine, phenylthiourea, 12-O-tetradecanoylphorbol-13 acetate, guanosine monophosphate, guanosine diphosphate, guanosine triphosphate, adenosine, adenosine monophosphate, adenosine diphosphate, adenosine triphosphate, uridine, uridine monophosphate, uridine diphosphate, uridine triphosphate, thymidine, thymidine monophosphate, thymidine diphosphate, thymidine triphosphate, epinephrine and nonrepinephrine;

(c) stabilizing said transdifferentiated cells of step (b) by administering a stabilizing effective amount of an agent selected from beta-carotene, retinoids, riboflavin and pteridines thereby stabilizing said transdifferentiated organ or tissue.

2. The method of claim 1 wherein said dedifferentiating step (a) is performed by a method selected from repeated sticks with a needle at the site of injury or damage, surgically opening the site of injury or damage and subjecting the site of injury or damage to a laser burn.

3. The method of claim 1 wherein said dedifferentiation step (a) is performed by physically or enzymatically separating the cells in said tissue or organ.

4. The method of claim 1 wherein said tissue or organ is selected from lens, retina, pancreas, and liver.

of:

dedifferentiated cells;

dedifferentiated cells produced in step (a);

step (b); thereby producing stabilized, transdifferentiated cells.

stabilizing agent are added simultaneously.

systemically.

from oral, enteral, by inhalation, topical, by aerosol and rectally.

transdifferentiation is the same agent which causes stabilization in step (c).

10. The method of claim 9 wherein said agent is retinoic acid.

11. The method of claim 9 wherein said agent is guanosine.

12. The method of claim 5 wherein said cells are from the lens.

13. The method of claim 5 wherein said cells are from the retina.